

OPERATOR'S MANUAL

DieHard®

12V Battery Charger & Engine Starter



Model No.
2871222

CAUTION

Read and follow all Safety
Rules and Operating Instructions
before Every Use of this Product.

SAVE THESE INSTRUCTIONS.

Sears Brands Management Corporation, Hoffman Estates, IL 60179 U.S.A.

00-99-001009/01

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DIEHARD THREE-YEAR FULL WARRANTY

When operated and maintained according to all supplied instructions, if this DieHard product fails due to a defect in material or workmanship within 3 years from the date of purchase, return it to any DieHard outlet in the United States for free replacement.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Sears Brands Management Corporation, Hoffman Estates, IL 60179

**FOR CUSTOMER ASSISTANCE OR REPLACEMENT PARTS,
CALL TOLL-FREE FROM 7 AM TO 5 PM CT
MONDAY THROUGH FRIDAY: 1-800-732-7764**

IMPORTANT: READ AND SAVE THIS SAFETY AND INSTRUCTION MANUAL.

SAVE THESE INSTRUCTIONS – The 71222 offers a wide range of features to accommodate your needs. This manual will show you how to use your charger safely and effectively. Please read, understand and follow these instructions and precautions carefully, as this manual contains important safety and operating instructions. The safety messages used throughout this manual contain a signal word, a message and an icon.

The signal word indicates the level of the hazard in a situation.

⚠ DANGER Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury to the operator or bystanders.

⚠ WARNING Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury to the operator or bystanders.

⚠ CAUTION Indicates a potentially hazardous situation which, if not avoided, could result in moderate or minor injury to the operator or bystanders.

IMPORTANT Indicates a potentially hazardous situation which, if not avoided, could result in damage to the equipment or vehicle or property damage.

Safety messages in this manual contain two different sentence styles.

- Unnumbered sentences state the hazard.
- Numbered sentences state how to avoid the hazard.

The icon gives a graphical description of the potential hazard.

⚠ WARNING



Pursuant to California Proposition 65, this product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

1. IMPORTANT SAFETY INSTRUCTIONS - SAVE THESE INSTRUCTIONS - This manual contains important safety and operating instructions



RISK OF ELECTRIC SHOCK OR FIRE.

- 1.1 Keep out of reach of children.
- 1.2 Do not expose the charger to rain or snow.
- 1.3 Use only recommended attachments. Use of an attachment not recommended or sold by the battery charger manufacturer may result in a risk of fire, electric shock or injury to persons or damage to property.
- 1.4 To reduce the risk of damage to the electric plug or cord, pull by the plug rather than the cord when disconnecting the charger.
- 1.5 An extension cord should not be used unless absolutely necessary. Use of an improper extension cord could result in a risk of fire and electric shock. If an extension cord must be used, make sure:
 - That the pins on the plug of the extension cord are the same number, size and shape as those of the plug on the charger.
 - That the extension cord is properly wired and in good electrical condition.
 - That the wire size is large enough for the AC ampere rating of the charger as specified in section 8.

- 1.6 **To reduce the risk of electric shock, unplug the charger from the outlet before attempting any maintenance or cleaning. Simply turning off the controls will not reduce this risk.**
- 1.7 Do not operate the charger with a damaged cord or plug; have the cord or plug replaced immediately by a qualified service person. (Call customer service at: 1-800-732-7764.)
- 1.8 Do not operate the charger if it has received a sharp blow, been dropped or otherwise damaged in any way; take it to a qualified service person. (Call customer service at: 1-800-732-7764.)
- 1.9 Do not disassemble the charger; take it to a qualified service person when service or repair is required. Incorrect reassembly may result in a risk of fire or electric shock. (Call customer service at: 1-800-732-7764.)



RISK OF EXPLOSIVE GASES.

- 1.10 **WORKING IN THE VICINITY OF A LEAD-ACID BATTERY IS DANGEROUS. BATTERIES GENERATE EXPLOSIVE GASES DURING NORMAL BATTERY OPERATION. FOR THIS REASON, IT IS OF UTMOST IMPORTANCE THAT YOU FOLLOW ALL INSTRUCTIONS IN THIS MANUAL EACH TIME YOU USE THE CHARGER.**
- 1.11 To reduce the risk of a battery explosion, follow all instructions in this manual and those published by the battery manufacturer and the manufacturer of any equipment you intend to use in the vicinity of the battery. Review the cautionary markings on these products and on the engine.
- 1.12 This charger employs parts, such as switches and circuit breakers, that tend to produce arcs and sparks. If used in a garage, locate this charger 18 inches or more above floor level.

2. PERSONAL PRECAUTIONS



RISK OF EXPLOSIVE GASES.

- 2.1 **NEVER** smoke or allow a spark or flame in the vicinity of a battery or engine.
- 2.2 Remove personal metal items such as rings, bracelets, necklaces and watches when working with a lead-acid battery. A lead-acid battery can produce a short-circuit current high enough to weld a ring or the like to metal, causing a severe burn.
- 2.3 Be extra cautious to reduce the risk of dropping a metal tool onto the battery. It might spark or short-circuit the battery or other electrical part that may cause an explosion.
- 2.4 Use this charger for charging **LEAD-ACID** batteries only. It is not intended to supply power to a low voltage electrical system other than in a starter-motor application. Do not use this battery charger for charging dry-cell batteries that are commonly used with home appliances. These batteries may burst and cause injury to persons and damage to property.
- 2.5 **NEVER** charge a frozen battery.
- 2.6 **NEVER** overcharge a battery.
- 2.7 Consider having someone close enough by to come to your aid when you work near a lead-acid battery.
- 2.8 Have plenty of fresh water and soap nearby in case battery acid contacts your skin, clothing or eyes.

- 2.9 Wear complete eye and body protection, including safety goggles and protective clothing. Avoid touching your eyes while working near the battery.
- 2.10 If battery acid contacts your skin or clothing, immediately wash the area with soap and water. If acid enters your eye, immediately flood the eye with cold running water for at least 10 minutes and get medical attention right away.
- 2.11 If battery acid is accidentally swallowed, drink milk, the whites of eggs or water. DO NOT induce vomiting. Seek medical attention immediately.

3. PREPARING TO CHARGE

⚠ WARNING 	⚠ WARNING 	RISK OF CONTACT WITH BATTERY ACID. BATTERY ACID IS A HIGHLY CORROSIVE SULFURIC ACID.
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- 3.1 If it is necessary to remove the battery from the vehicle to charge it, always remove the grounded terminal first. Make sure all of the accessories in the vehicle are off to prevent arcing.
- 3.2 Be sure the area around the battery is well ventilated while the battery is being charged.
- 3.3 Clean the battery terminals before charging the battery. During cleaning, keep airborne corrosion from coming into contact with your eyes, nose and mouth. Use baking soda and water to neutralize the battery acid and help eliminate airborne corrosion. Do not touch your eyes, nose or mouth.
- 3.4 Add distilled water to each cell until the battery acid reaches the level specified by the battery manufacturer. Do not overfill. For a battery without removable cell caps, such as valve regulated lead acid batteries (VRLA), carefully follow the manufacturer's recharging instructions.
- 3.5 Read, understand and follow all instructions for the charger, battery, vehicle and any equipment used near the battery and charger. Study all of the battery manufacturer's specific precautions while charging and recommended rates of charge.
- 3.6 Determine the voltage of the battery by referring to the vehicle owner's manual and make sure that the output voltage selector switch is set to the correct voltage. If the charger has an adjustable charge rate, charge the battery in the lowest rate first.
- 3.7 Make sure that the charger cable clips make tight connections.

4. CHARGER LOCATION

⚠ WARNING 	⚠ WARNING 	⚠ WARNING 	RISK OF EXPLOSION AND CONTACT WITH BATTERY ACID.
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- 4.1 Locate the charger as far away from the battery as the DC cables permit.
- 4.2 Never place the charger directly above the battery being charged; gases from the battery will corrode and damage the charger.
- 4.3 Do not set the battery on top of the charger.
- 4.4 Never allow battery acid to drip onto the charger when reading the electrolyte specific gravity or filling the battery.
- 4.5 Do not operate the charger in a closed-in area or restrict the ventilation in any way.

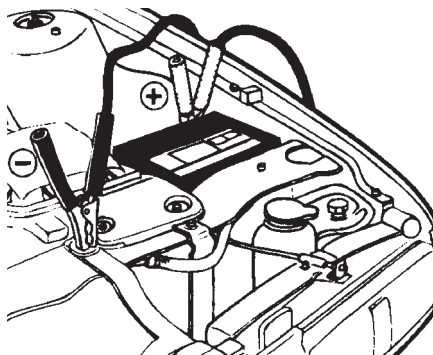
5. DC CONNECTION PRECAUTIONS

- 5.1 Connect and disconnect the DC output clips only after setting all of the charger switches to the "off" position (if applicable) and removing the AC plug from the electrical outlet. Never allow the clips to touch each other.
- 5.2 Attach the clips to the battery and chassis, as indicated in sections 6 and 7.

6. FOLLOW THESE STEPS WHEN BATTERY IS INSTALLED IN VEHICLE



A SPARK NEAR THE BATTERY MAY CAUSE A BATTERY EXPLOSION. TO REDUCE THE RISK OF A SPARK NEAR THE BATTERY:



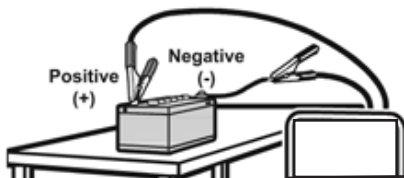
NEGATIVE GROUNDED SYSTEM

- 6.1 Position the AC and DC cables to reduce the risk of damage by the hood, door and moving or hot engine parts. NOTE: If it is necessary to close the hood during the charging process, ensure that the hood does not touch the metal part of the battery clips.
- 6.2 Stay clear of fan blades, belts, pulleys and other parts that can cause injury.
- 6.3 Check the polarity of the battery posts. The POSITIVE (POS, P, +) battery post usually has a larger diameter than the NEGATIVE (NEG, N, -) post.
- 6.4 Determine which post of the battery is grounded (connected) to the chassis (vehicle frame). If the negative post is grounded to the chassis (as in most vehicles), see step 6.5. If the positive post is grounded to the chassis, see step 6.6.
- 6.5 For a negative-grounded vehicle, connect the POSITIVE (RED) clip from the battery charger to the POSITIVE (POS, P, +) ungrounded post of the battery. Connect the NEGATIVE (BLACK) clip to the vehicle frame or engine block at a distance away from the battery. Do not connect the clip to the carburetor, fuel lines or sheet-metal body parts. Connect to a heavy gauge metal part of the vehicle frame or engine block.
- 6.6 For a positive-grounded vehicle, connect the NEGATIVE (BLACK) clip from the battery charger to the NEGATIVE (NEG, N, -) ungrounded post of the battery. Connect the POSITIVE (RED) clip to the vehicle frame or engine block at a distance away from the battery. Do not connect the clip to the carburetor, fuel lines or sheet-metal body parts. Connect to a heavy gauge metal part of the vehicle frame or engine block.
- 6.7 Connect charger AC supply cord to electrical outlet.
- 6.8 When disconnecting the charger, turn all switches to off, disconnect the AC cord, remove the clip from the vehicle chassis and then remove the clip from the battery terminal.
- 6.9 See CALCULATING CHARGE TIME for length of charge information.

7. FOLLOW THESE STEPS WHEN BATTERY IS OUTSIDE VEHICLE



A SPARK NEAR THE BATTERY MAY CAUSE A BATTERY EXPLOSION. TO REDUCE THE RISK OF A SPARK NEAR THE BATTERY:



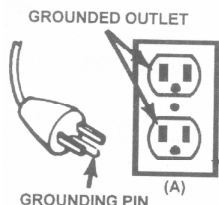
- 7.1 Check the polarity of the battery posts. The POSITIVE (POS, P, +) battery post usually has a larger diameter than the NEGATIVE (NEG, N, -) post.
- 7.2 Attach at least a 24-inch (61 cm) long 6-gauge (AWG) insulated battery cable to the NEGATIVE (NEG, N, -) battery post.
- 7.3 Connect the POSITIVE (RED) charger clip to the POSITIVE (POS, P, +) post of the battery.
- 7.4 Position yourself and the free end of the cable you previously attached to the NEGATIVE (NEG, N, -) battery post as far away from the battery as possible – then connect the NEGATIVE (BLACK) charger clip to the free end of the cable.
- 7.5 Do not face the battery when making the final connection.
- 7.6 Connect charger AC supply cord to electrical outlet.
- 7.7 When disconnecting the charger, always do so in the reverse order of the connecting procedure and break the first connection while as far away from the battery as practical.
- 7.8 A marine (boat) battery must be removed and charged on shore. To charge it onboard requires equipment specially designed for marine use.

8. BATTERY CHARGING – AC CONNECTIONS



RISK OF ELECTRIC SHOCK OR FIRE.

- 8.1 This battery charger is for use on a nominal 120-volt circuit and has a grounded plug that looks like the plug illustrated. The charger must be grounded to reduce the risk of electric shock. The plug must be plugged into an outlet that is properly installed and grounded in accordance with all local codes and ordinances. The plug pins must fit the receptacle (outlet). Do not use with an ungrounded system.



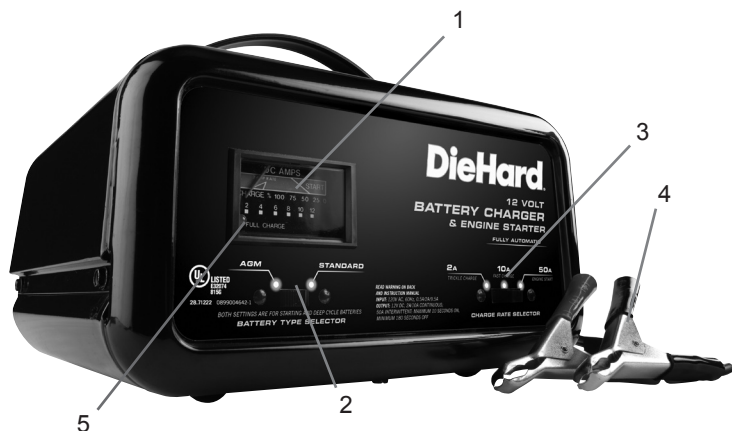
- 8.2 **⚠ DANGER** Never alter the AC cord or plug provided – if it does not fit the outlet, have a proper grounded outlet installed by a qualified electrician. An improper connection can result in a risk of an electric shock or electrocution.
NOTE: Pursuant to Canadian Regulations, use of an adapter plug is not allowed in Canada. Use of an adapter plug in the United States is not recommended and should not be used.

- 8.3** Recommended minimum AWG size for extension cord:
- 100 feet long or less - use a 14 gauge extension cord.
 - Over 100 feet long - use a 10 gauge extension cord.

9. ASSEMBLY INSTRUCTIONS

Remove all cord wraps and uncoil the cables prior to using the battery charger.

10. FEATURES /CONTROL PANEL



1. Ammeter
2. Battery Type Selector Switch
3. Charge Rate Selector Switch
4. Battery Clips
5. Full Charge LED

Setting the controls

All of the controls for your charger are located on the front of the charger. Read these instructions to properly set the charger controls.

Ammeter

The Ammeter indicates the amount of current, measured in amps, that is being drawn by the battery. As a battery takes on a charge, it draws less current from the charger. Correspondingly, the meter will show less current being drawn by the battery. When the current stops decreasing, the battery is charged.

The 2 amp charge rate may indicate some activity on the meter, although the meter does not have the resolution to display this low rate. For the 2 amp charge rate, a triangle has been provided. Its accuracy has been calibrated for use with small batteries.

- **Percent of Charge**

The percent of charge is based on the current drawn by the battery. For this reason, accuracy will vary with the size and battery type.

LED Indicators

- **Full Charge LED** - Indicates the battery is fully charged and the charger is in Maintain Mode.

Battery Type Switch

Use this switch to set the type of battery to be charged; Standard or AGM. Both settings are for regular and deep cycle batteries. If you are not sure what type of battery you have, select the AGM setting.

Charge Rate Selector Switch:

Use the Charge Rate Selector switch to select the charge rate setting you require.

11. OPERATING INSTRUCTIONS

⚠WARNING

This battery charger must be properly assembled in accordance with the assembly instructions before it is used.

The charger does not have an On/Off switch. The On and Off commands are controlled by plugging the 71222 into a 120V AC electrical wall outlet only after the battery connections have been made.

NOTE: Once the charger is plugged in, the battery clips are live. Make sure they are properly connected to the battery before plugging the charger into the AC outlet or it could cause a short circuit that may cause personal injury and/or property damage.

Charging

1. Ensure that all of the charger components are in place and in good working condition, for example, the plastic boots on the battery clips.
2. Connect the battery following the precautions listed in sections 6 and 7.
3. Select the appropriate settings for your battery.
4. Connect the AC power following the precautions listed in section 8. Make sure to place the charger on a dry, non-flammable surface like metal or concrete.
5. To disconnect the charger, reverse the above procedures.

Automatic Operation

When an automatic charge is performed, the charger switches to a maintain mode automatically after the battery is charged.

Using the 50 Amp Engine Start feature

Your battery charger can be used to jumpstart your car if the battery is low. Follow these instructions on how to use the ENGINE START feature.

⚠WARNING

Follow all safety instructions and precautions for charging your battery. Wear complete eye protection and clothing protection. Charge your battery in a well-ventilated area.

IMPORTANT

Using the ENGINE START feature WITHOUT a battery installed in the vehicle could cause damage to the vehicle's electrical system. **NOTE:** If you have charged the battery and it still will not start your car, do not use the engine start feature, or it could damage the vehicle's electrical system.

1. With the charger unplugged from the A.C. outlet, connect the charger to the battery following the instructions given in section 6: FOLLOW THESE STEPS WHEN BATTERY IS INSTALLED IN VEHICLE.
2. Plug the charger AC power cord into the AC outlet.
3. With the charger plugged in and connected to the battery of the vehicle, set the charge rate selector switch to the engine start position.
4. Crank the engine until it starts or 10 seconds pass. If the engine does not start, wait 3 minutes before cranking again. This allows the charger and battery to cool down.

NOTE: During extremely cold weather, or if the battery is under 2 volts, charge the battery for 5 minutes before cranking the engine.

5. If the engine fails to start, charge the battery for 5 more minutes before attempting to crank the engine again.
6. After the engine starts, unplug the AC power cord before disconnecting the battery clips from the vehicle.
7. Clean and store the charger in a dry location.

NOTE: If the engine does turn over but never starts, there is not a problem with the starting system; there is a problem somewhere else with the vehicle. STOP cranking the engine until the other problem has been diagnosed and corrected.

12. CALCULATING CHARGE TIME

Use the following table to more accurately determine the time it will take to bring a battery to full charge. First, identify where your battery fits into the chart.

CCA = Cold Cranking Amps

RC = Reserve Capacity

AH = Amp Hour

NR means that the charger setting is NOT RECOMMENDED.

Find your battery's rating on the chart below, and note the charge time given for each charger setting. The times given are for batteries with a 50% charge prior to recharging. Add more time for severely discharged batteries.

BATTERY SIZE/RATING			CHARGE RATE/CHARGING TIME	
			2 AMP	10 AMP
SMALL BATTERIES	Motorcycle, garden, tractor, etc.	6 - 12 AH	2 - 4 hrs	NR
		12 - 32 AH	4 - 10 hrs	NR
CARS/ TRUCKS	200 - 315 CCA	40 - 60 RC	11 ¼ - 14 ½ hrs	2¼ - 3 hrs
	315 - 550 CCA	60 - 85 RC	14 ½ - 18 ¼ hrs	3 - 3¾ hrs
	550 - 1000 CCA	80 - 190 RC	18 ¼ - 34 ¾ hrs	3¾ - 7 hrs
MARINE/DEEP CYCLE		80 RC	17 ½ hrs	3½ hrs
		140 RC	27 hrs	5½ hrs
		160 RC	30 hrs	6 hrs
		180 RC	33 hrs	6½ hrs

13. MAINTENANCE INSTRUCTIONS

- 13.1 After use and before performing maintenance, unplug and disconnect the battery charger (see sections 6, 7 and 8).
- 13.2 Use a dry cloth to wipe all battery corrosion and other dirt or oil from the battery clips, cords, and the charger case.
- 13.3 Ensure that all of the charger components are in place and in good working condition, for example, the plastic boots on the battery clips.
- 13.4 Servicing does not require opening the unit, as there are no user-serviceable parts.
- 13.5 All other servicing should be performed by qualified service personal.

14. MOVING AND STORAGE INSTRUCTIONS

- 14.1 Store the charger unplugged, in an upright position. The cord will still conduct electricity until it is unplugged from the outlet.
- 14.2 Store inside, in a cool, dry place.
- 14.3 Do not store the clips on the handle, clipped together, on or around metal, or clipped to cables.
- 14.4 If the charger is moved around the shop or transported to another location, take care to avoid/prevent damage to the cords, clips and charger. Failure to do so could result in personal injury or property damage.

15. TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	REASON/SOLUTION
The charger will not turn on, there is no reading on the ammeter or the charger is not charging the battery.	Charger is not plugged in.	Plug the charger into an AC outlet.
	No power at the receptacle.	Check for open fuse or circuit breaker supplying AC outlet.
	Poor electrical connection.	Check power cord and extension cord for loose fitting plug.
	Clips are not making a good connection to the battery.	Check for poor connection to battery and frame. Make sure connection points are clean. Rock the clips back and forth for a better connection.
	Connections are reversed.	Unplug the charger and reverse the clips.
	Battery is defective (will not accept a charge).	Have battery checked.
	2 amp charge rate is being used.	Ammeter may show no activity at the 2A charge rate.
Ammeter reading stays high.	Battery is severely discharged.	Continue charging battery for two more hours. If problem continues have the battery checked.
	Wrong battery voltage.	Verify that the output voltage of the charger matches the battery voltage.
Ammeter reads less than selected charge rate when charging a discharged battery.	Extension cord is too long or wire gauge is too small.	Use a shorter or heavier gauge extension cord.
	Weak cell or sulfated plate in battery.	If the battery will not take a charge, have it checked.
	Battery is only partially discharged.	Continue to charge the battery.

PROBLEM	POSSIBLE CAUSE	REASON/SOLUTION
The charger is making an audible clicking sound.	Circuit breaker is cycling.	The settings may be wrong. Check the charger settings.
	Battery is defective.	Have the battery checked.
	Shorted battery cables or clips.	Circuit breaker cycles when current draw is too high. Check for shorted cables or clips and replace if necessary.
	Severely discharged battery, but otherwise it is a good battery.	The battery may not want to accept a charge due to a run-down state. Allow charging to continue until battery has a chance to recover sufficiently to take a charge. If more than 20 minutes, stop charging and have the battery checked.
	Reverse connections at battery.	Shut the charger off and correct the lead connections.
Charger makes a noticeable buzz or hum.	Transformer laminations vibrate (buzz).	No problem, this is a normal condition.
Short or no start cycle when cranking engine.	Drawing more than 50 amps.	Crank time varies with the amount of current drawn. If cranking draws more than 50 amps, crank time may be less than 10 seconds.
	Failure to wait 3 minutes between cranks.	Wait 3 minutes of rest time before the next crank.
	Clips are not making a good connection.	Check for poor connection at battery and frame.
	AC cord and/or extension cord is loose.	Check power cord and extension cord for loose fitting plug.
	No power at receptacle.	Check for open fuse or circuit breaker supplying AC outlet.
	The charger may be overheated.	The thermal protector may have tripped and needs a little longer to reset. Make sure the charger vents are not blocked. Wait and try again.
	Battery may be severely discharged.	On a severely discharged battery, charge for 10 to 15 minutes in the 10 amp manual rate to help assist in cranking.
The measured current is much lower than what was selected.	The charger reached the maximum voltage and is reducing the current.	No problem, this is a normal condition.

16. BEFORE RETURNING FOR REPAIRS

- 16.1** When a charging problem arises, make certain that the battery is capable of accepting a normal charge. Double check all connections, the AC outlet for a full 120 volts, the charger clips for correct polarity and the quality of the connections from the cables to the clips and from the clips to the battery system. The clips must be clean.
- 16.2** When a battery is very cold, partially charged or sulfated, it will not draw the full rated amperes from the charger. It is both dangerous and damaging to a battery to force higher amperage into it than it can effectively use in recharging.
- 16.3** When an UNKNOWN OPERATING PROBLEM arises, please read this complete manual and call the customer service number for information that will usually eliminate the need for return.

If the above solutions do not eliminate the problem, or for information about troubleshooting or replacement parts, call toll-free from anywhere in the U.S.A.

1-800-732-7764

7:00 am to 5:00 pm Central Time Monday through Friday